

# Work Order ID 54917

January 5, 2010 9:45:33 AM



Page 1

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00

Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals: Process Plan: *[Signature]*

Date: 10-1-05 Tooling:

Date:

QC:

Date: SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D2650

Rev F

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile & type labels per PPP D206-642-241

CHG005

110

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Deburr Fwd edge of tube 2- Remove ridge on inside of Fwd edge of tube as per Dwg D2650 3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required. Pick: Qty Part Number Description Batch: A/R Aluminum Rod m112507 4-G m112860

120

0.00



QC6- Inspect dimensions to drawing

QC

Memo

0.00

Quality Control

27 510/01/14

N/A *[Signature]*

*[Signature]* 26 10/04/06 *[Signature]*

*[Signature]*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Routing Print

January 7, 2010 10:53:31 AM

Page 1 of 5

Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
Item ID: D206-642-241		Item Name: Replacement Skidtube								
Routing Type: Production										
100	DC			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
DOCUMENT CONTROL					0.0000	0.0000	0.0000	0.0000	0.0000	
Photocopy bluefile & type labels per PPP D206-642-241					CHG005					
Total for Routing Sequence   100  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
110	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	
1-Deburr Fwd edge of tube										
2- Remove ridge on inside of Fwd edge of tube as per Dwg D2650										
3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required.										
Pick:										
Qty : Part Number Description Batch										
A/R : Aluminum Rod : _____										
4-Grind weld flush to cap on top surface only.										
5-Cut Aft end as per dwg 2650 from front of tube and Deburr										
6-Remove inner indexing ridge on Aft end of skidtube as per Dwg D2650										
7-Open holes for Aft end cap as per Dwg D2650 with #30 Drill Bit using DT8025.										
8-Drill pilot holes using Dt 8167.										
9-Locate DT8732 from inner Aft saddle hole & 3rd crossbolt hole. Insert D3286-1 doubler using DT8732 & D206-642-241-TV, then locating doubler off of 3/16" holes, cleco DT8732 & doubler leaving DT8732 for added support.										
10- Drill D3286-1 doubler rivet holes in tube using # 30 drill, spot drilling doubler at the same time.										
11-Working from the center out, drill # 30 holes into D3286-1 doubler. Cleco each hole as it is being drilled. Verify angle of holes to accommodate rivet heads.										
12-Remove 3/16" cleco's only and open GHW holes to Ø0.500" as per Dwg D2650										
13-Remove D3286-1 doublers, identify orientation, deburr, then attach them to the workorder										
14-Remove indexing edge using DT8741 as per Dwg D2650										
15-C'sink GHW rivet holes as per Dwg D2650										
Total for Routing Sequence   110  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

h 10/1/13

# Routing Print

January 7, 2010 10:53:32 AM

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Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
120	QC		QC6	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC6- Inspect dimensions to drawing	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Routing Sequence   120  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1-Open crossbolt holes to Ø0.3125"										
2-Drill pilot holes using DT8028-3, then open to Ø0.297" as per Dwg D2650. Open Aft cap hole #6.										
3-Deburr tube and blow out chips from inside the tube										
Total for Routing Sequence   130  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140	HandFinish		HandFinish1	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Chemical Conversion Coat per QSI005 4.1	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Routing Sequence   140  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150	QC		QC3	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC3- Inspect Part Finish	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Routing Sequence   150  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1-Open holes to finished size as per Dwg D2650, D2650-3 Drilling Detail (without cutting fluid)										
2-C"sink crossbolt spacer holes as per Dwg D2650(without cutting fluid)										
3-Deburr and blow out all chips from inside the tube										
Total for Routing Sequence   160  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170	QC		QC6	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC6- Inspect dimensions to drawing	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Routing Sequence   170  :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

S 10/11/14

M 10/11/14

M 10/11/14

M 10/11/14

S 10/11/14

70

# Routing Print

January 7, 2010 10:53:32 AM

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Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
180 Skidtubes	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

1-Locate, install and rivet doublers as per Dwg D2650. Micro-shave rivets as required

2-Bond D2654-3 web in place as per QSI 015. Ensure holes line up. Allow 12 Hrs. cure time before cutting

Start Date: 10/1/14 Time: 2:30

Finish Date: 10/1/15 Time: 11:30 AM

10/1/14

Pick:

Qty: Part Number: Description: Batch

A/R: Sikaflex-291 M112345

Sikaflex expire date: 10/3/10

Total for Routing Sequence   180   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190	QC		QC5	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC5- Inspect part completeness to step on W/O	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

10/1/15

Total for Routing Sequence   190   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

1-remove alodine from around hole and prepare for welding

BE 10/1/18

2-Prep per QSI 005 and Insert D2649 crossbolt spacers. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod.

Pick:

Qty: Part Number: Description: Batch

A/R: Aluminum Rod: M112507

BE 10/1/18

3-Grind welds flush as per Dwg D2650.

ANM 10-1-18

4-Using DT8733, insert (2) D3286-3 spacers as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.402" before welding other side. Use SS rod as required.

A/R: SS Rod: NONE

BE 10/1/20

ANM 10-1-20

5-Counterbore 5/16" x 0.750" deep except 7th hole from Aft end as per Dwg D2650. Deburr

Total for Routing Sequence   200   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210	HandFinish			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HandFinishing					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Install D2680-041 Nut Plate as per Dwg D2650

ANM 10-1-20

Total for Routing Sequence   210   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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# Routing Print

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Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
220	QC		QC9	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC9- Inspect visual per QSI004- Fusion Welds	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence [ 220] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230	QC		QC5	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC5- Inspect part completeness to step on W/O	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence [ 230] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240	HandFinish		HandFinish2	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Pressure Wash per QSI005 4.3	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence [ 240] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250	Powdercoat		Powdercoat1	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			White Gloss(Ref:4.3.5.1) per QSI005 4.3- Alum	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence [ 250] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260	QC		QC3	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC3- Inspect Part Finish	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence [ 260] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

START TIME: 11:30AM  
OVEN TEMPERATURE: 320°F  
FINISH TIME: 12:09PM

10-01-26 (X)

M113170

QC9-PD 10.01.20

QC10-Scalco/20

Scalco/20

M 10-01-26

(X)

Scalco/20

# Routing Print

January 7, 2010 10:53:33 AM

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Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
270 HandFinishing	HandFinish			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1- Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate. A/R: [ ] Sikaflex-291 [ ] [ ] [ ] Sikaflex expire date: [ ] 10/08										
2-Install D2651-3 O-Rings on D2651-I plugs with Petroleum Jelly and install plugs as per Dwg D2650 (D2650-3 detail). Clean excess adhesive.										
3-Install MS27039-4-06 Screw as per DEO 9153.										
4 -Install D2646 Aft Cap and seal with Sikaflex. Clean excess adhesive A/R: [ ] Sikaflex-291 [ ] [ ] [ ] Sikaflex expire date: [ ] 10/08										
5 -Wing Walk as per Dwg D2650-3 and QSI 005 4.4 A/R Batch: [ ] Batch: 1113545										
Total for Routing Sequence   270   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300	QC		QC5	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC5- Inspect part completeness to step on W/O	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Routing Sequence   300   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310	Packaging			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Packaging					0.0000	0.0000	0.0000	0.0000	0.0000	
Identify and pack for shipping as per PPP D206-664-241 Location: _____ PPP Rev: _____										
Total for Routing Sequence   310   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
320	QC		QC21	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC21- Final Inspection - Work Order Release	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Routing Sequence   320   :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total for Alternate Route [Production] of Item [D206-642-241]:					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

10-01-09 ①

8,06,129

**Work Order ID 54917**

January 5, 2010 9:45:33 AM



Page 2

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130



Skidtubes

Skidtubes

0.00

Memo

0.00

1-Open crossbolt holes to Ø0.3125" 2-Drill pilot holes using DT8028-3, then open to Ø0.297" as per Dwg D2650. Open Aft cap hole #6. 3-Deburr tube and blow out chips from inside the tube

H 10/1/14

140



HandFinish

Chemical Conversion Coat per QS1005 4.1

0.00

Memo

0.00

Hand Finishing

H 10/1/14

150



QC

QC3- Inspect Part Finish

0.00

Memo

0.00

Quality Control

BE 10/01/14



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 54917

January 5, 2010 9:45:33 AM



Page 3

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

160



Skidtubes

Skidtubes

0.00

0.00

Memo

1-Open holes to finished size as per Dwg D2650, D2650-3 Drilling Detail  
(without cutting fluid) 2-C'sink crossbolt spacer holes as per Dwg  
D2650(without cutting fluid) 3-Deburr and blow out all chips from inside the  
tube

10/1/14

170



QC

Quality Control

QC6- Inspect dimensions to drawing

0.00

0.00

Memo

2) 10/1/14



180



Skidtubes

Skidtubes

0.00

0.00

Memo

1-Locate, install and rivet doublers as per Dwg D2650. Micro-shave rivets as  
required 2-Bond D2654-3 web in place as per QSI 015. Ensure holes line  
up. Allow 12 Hrs. cure time before cutting. Start

Date: 10/1/14 Time: 2:30 Finish Date: 10/1/15 Time: 11:30 am

10/1/14

Batch M 112345  
exp Date 10/8/30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 54917**

January 5, 2010 9:45:33 AM

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Item ID: D206-642-241

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Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

190

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

~~0.00~~ 2.00/15

②

200

Skidtubes

0.00



Skidtubes

Memo

0.00

Skidtubes

1-remove alodine from around hole and prepare for welding 2-Insert D2649 crossbolt spacers. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod. Pick: QtyPart NumberDescriptionBat

BE 19/01/20

210

HandFinishing

0.00



HandFinish

Memo

0.00

Hand Finishing

Install D2680-041 Nut Plate as per Dwg D2650

11 12/11/20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

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Page 5

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Approvals:

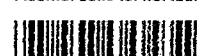
Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

220

QC9- Inspect visual per QSI004- Fusion Welds

0.00

QC9 - PD 10.01.20



QC

Memo

0.00

QC10 - S 10.1.1.20

Quality Control

230

QC5- Inspect part completeness to step on W/O

0.00

S 10.1.1.20



QC

Memo

0.00

(X)

Quality Control

240

Pressure Wash per QSI005 4.3

0.00

S 10.1.1.20



HandFinish

Memo

0.00

(X)

Hand Finishing

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

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Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

250

White Gloss(Ref.4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

START TIME:

11:30 AM

OVEN TEMPERATURE:

320°F

⇒ JH 10-01-26 (4)

Powder Coating

12:02 PM FINISH TIME

260

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

⇒ 7m 10/01/28 (1X)

Quality Control

270

HandFinishing

0.00



HandFinish

Memo

0.00

Hand Finishing

1- Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate. ARSikaflex-29112345 Sikaflex expire date: 10/08 2-Install D2651-3 O-Rings on D2651-1 plugs with Petroleum

16K 10-01-29 (2)



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 54917

January 5, 2010 9:45:33 AM



Page 7

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00

Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

280

0.00



HandFinishing

HandFinish

Memo

0.00

Hand Finishing

1-Install D2646 Aft Cap and seal with Sikaflex. Clean excess adhesive

A/RSikaflex-291 112345 Sikaflex expire date: 10/08 2-  
Wing Walk as per Dwg D2650-3 and QSI 005 4.4 Batch: 1113545

*AK 10-01-29*

290

0.00



QC3- Inspect Part Finish

QC

Memo

0.00

Quality Control

*27 8106129*

300

0.00



QC5- Inspect part completeness to step on W/O

QC

Memo

0.00

Quality Control

*8106129*

*(H)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 54917**

January 5, 2010 9:45:33 AM

Page 8

Item ID: D206-642-241

Accept

Setup Start

Revision ID:

Stop

Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00

Required Date: 18/01/2010 Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Run Start

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

310



Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPP D206664241 IF  
APPLICABLE Location: \_\_\_\_\_ PPP Rev: \_\_\_\_\_

MP 54907

10-2-3 S

320



QC

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

Quality Control

10/02/04 AG

MF 10-2-4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Single-Level Bill

January 7, 2010 10:57:21 AM

Page 1 of 2

Criteria : Item ID: d206-642-241, All Product Families, All Item Types, All Categories, All Buyers/Planners, Effective Start Date: 1/07/10.

Single Level Bill of Material Standard Report As of: 1/07/10

Parent Item ID D206-642-241

Unit Measure Each

Replacement Item ID

Item Name Replacement Skidtube

Item ID	Item Name	Replacement Item ID	Qty/ Assy	Unit Measure	Eff. Start Date	Eff. Stop Date
BOM Type Production						
D3286-1	Doubler		2.0000	Each	12/05/09	347692 ② 11/10/11/13
D2647	Cap		1.0000	Each	12/05/09	B 43846 ① 11/10/11/7
D2600-1-160	Extrusion Round 3" 206		1.0000	Each	1/07/10	B 54448 ① 11/10/11/7
D2654-3	Web		1.0000	Each	12/05/09	B 478679 ① 11/10/11/14
CR3212-4-04	Cherry Rivet		52.0000	Each	1/01/08	1111359 ③ 11/12/23/14 ③ 11/11/14
D2649	Cross Bolt Spacer		18.0000	Each	12/05/09	B 47112 ① ② 251529 ③ ④ 11/10/11/18
D3286-3	Spacer		2.0000	Each	12/05/09	B 46643 ② ③ 11/10/11/20
D2680-041	Nut Plate		1.0000	Each	12/05/09	B-55366 AWM 10-1-20
CR3212-4-03	Cherry Rivet		2.0000	Each	1/01/08	B-11 0139 - AWM 10-1-20
CCR264SS3-3	Cherry Rivet		2.0000	Each	1/01/08	B-11 3539 - AWM 10-1-20
D2646	Aft Cap		1.0000	Each	12/05/09	B 48104 ① ② 11/10/11/28
D2651-1	Plug		18.0000	Each	12/05/09	B 51530 ① ② 11/10/11/28
AN960JD416	Washer	113288	1	Each	1/01/08	BK 10-01-28
D2651-3	O-Ring		18.0000	Each	12/05/09	BK 10-01-28
MS27039-1-08	Screw		46.0000	Each	1/01/08	BK 10-01-28
ALS4-1032-130	Insert		44.0000	Each	1/01/08	BK 10-01-28
MS27039-4-06	Screw		1.0000	Each	1/01/08	BK 10-01-28
AN960JD10L	Washer		46.0000	Each	1/01/08	BK 10-01-28
D3537-1	Wearpad		4.0000	Each	1/07/10	BK 10-01-28

## Single-Level Bill of Material Standard Report

As of:

1/07/10

Parent Item ID D206-642-241

Unit Measure Each

Replacement Item ID

Item Name

Replacement Skidtube

Item ID	Item Name	Replacement Item ID	Qty/ Assy	Unit Measure	Eff. Start Date	Eff. Stop Date
D3537-3	Wearpad	35697	1	1.0000	Each	1/07/10
D3535-13	Wearshoe	38759	1	1.0000	Each	1/07/10
D3536-13	Gasket	38761	1	1.0000	Each	1/07/10
D3535-21	Wearshoe	37624	1	1.0000	Each	1/07/10
D3536-21	Gasket	47010	1	1.0000	Each	1/07/10
D3535-33	Wearshoe	51647	1	1.0000	Each	1/07/10
D3536-33	Gasket	51593	1	1.0000	Each	1/07/10

1/2 10-a-29. 0.

QTY -1	QTY -3	QTY -5	QTY -7	PART NUMBER	DESCRIPTION
X				D2650-1	SKIDTUBE ASSEMBLY
	X			D2650-3	SKIDTUBE ASSEMBLY
		X		D2650-5	SKIDTUBE ASSEMBLY
			X	D2650-7	SKIDTUBE ASSEMBLY
1	1	1	1	D2600-1-160	EXTRUSION
1				D2654-1	WEB
	1			D2654-3	WEB
		1		D2654-5	WEB
			1	D2654-7	WEB
1	1	1	1	D2645	AFT CAP
1	1	1	1	D2647	CAP
17	18	19	23	D2649	CROSS BOLT SPACER
16	18	14	22	D2651-1	PLUG
16	18	14	22	D2651-3	O-RING
1	1	1	1	D2680-041	NUT PLATE
2	2			D3286-1	DOUBLER
2	2			D3286-3	STUD
42	44	54	60	ALS7-1032-130	INSERT (or AKS4-1032-130, ALS4-1032-130, ALS7-1032-130)
2	2	2	2	AN960JD10L	WASHER
2	2	2	2	CCR264SS3-3	RIVET
2	2	2	2	CR3212-4-03	RIVET
2	2	2	2	MS27039-1-08	SCREW
1	1	1	1	MS27039-4-06	SCREW
1	1	1	1	AN960JD416	WASHER
52	52			CR3212-4-04	RIVET

F

F

NOTES:

MATERIAL: N/A  
 FINISH: -CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
 -POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3  
 -BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4  
 TOLERANCES: PER DART QSI 016 UNLESS OTHERWISE NOTED  
 UNITS: INCHES UNLESS OTHERWISE NOTED  
 BREAK SHARP EDGES: 0.005 TO 0.010 MAX  
 IDENTIFICATION: NONE  
 WEIGHT: N/A  
 WELD PER DART QSI 004  
 DAMAGE TOLERANCE ON FWD BEND:  
 THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020 DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.  
 ) BOND WEB INTO OUTER TUBE WITH SIKAFLEX-2411-291 ADHESIVE PER DART QSI 015  
 ) INSERT D2651-1 PLUG C/W D2651-2 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE)  
 ) DRILL Ø0.297 FOR ALS7-1032-130 INSERTS USING TEMPLATE DT8056-1 ON -1 TUBE, DT8056-3 ON -3 TUBE, DT8056-5 ON -5 TUBE, AND DT8056-7 ON -7 TUBE. INSTALL INSERTS AFTER FINISH.  
 ) TOLERANCES ARE PER DART QSI 016 UNLESS OTHERWISE NOTED

SHOP COPY  
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 WITHOUT NOTICE  
 WORK ORDER  
 NO. 54917  
 PR 10-1-05

RELEASED  
 08-07-23

DESIGN	DS	DESCRIPTION	BY	DATE
DRAWN	AJS	DART AEROSPACE USA, INC		
CHECKED		PORT HADLOCK, WA		
MFG. APPR.		DRAWING NO. D2650	REV. F	
DE APPR.		TITLE 206/407 SKIDTUBE ASSEMBLIES	SCALE	
DATE	08.08.08		NTS	
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



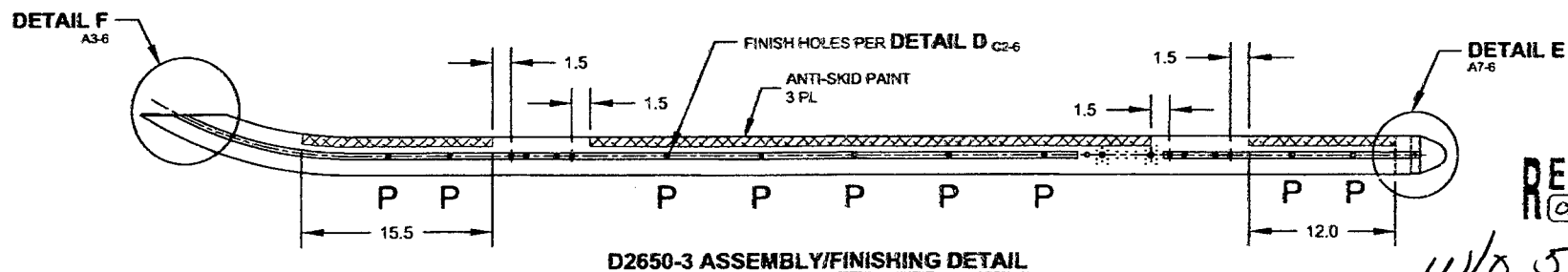
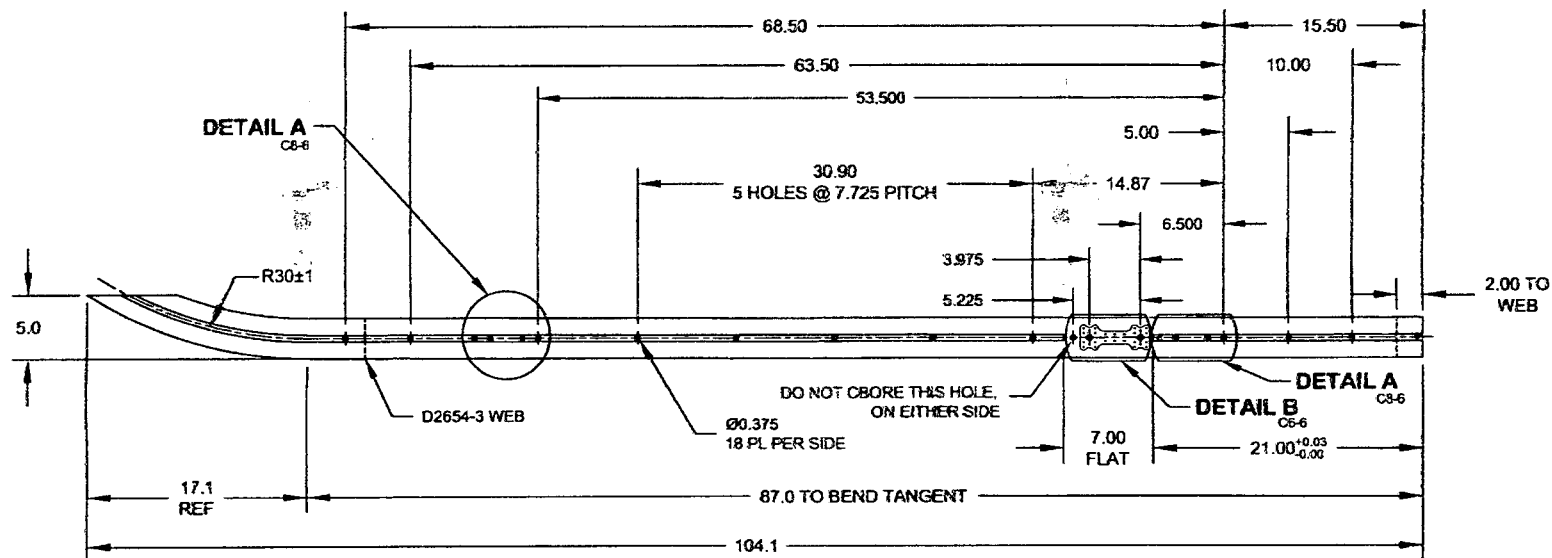
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**RELEASED**  
05 07 22 110

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AJS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 3 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
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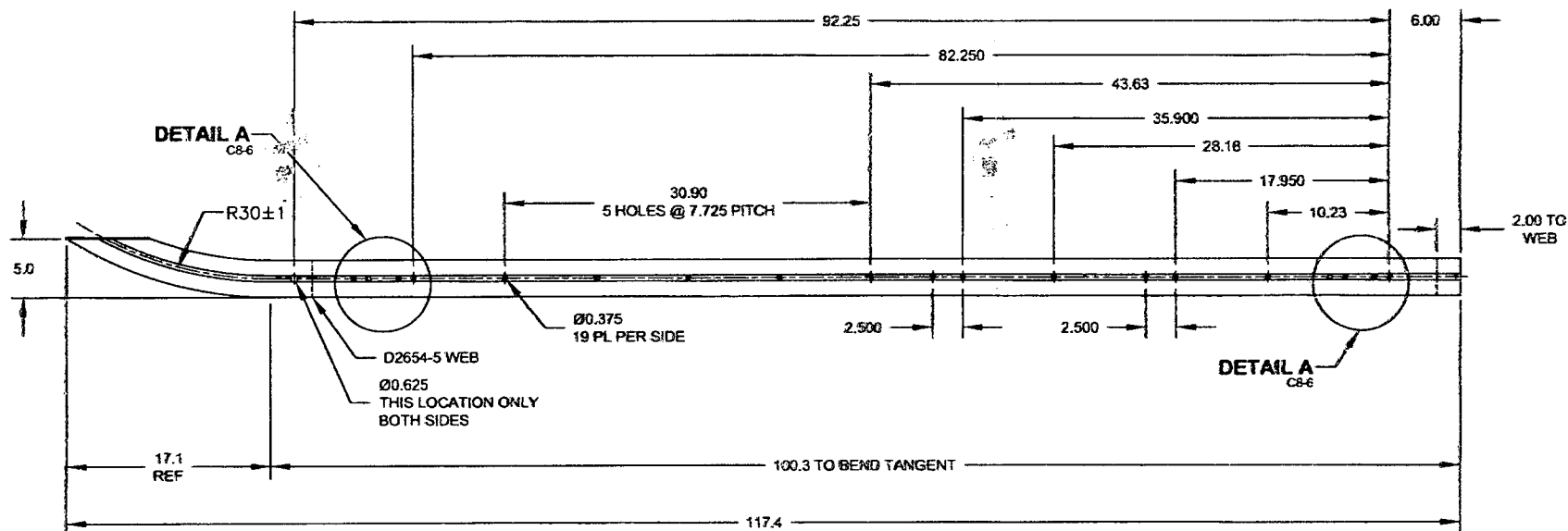
W/O:		WORK ORDER CHANGES					
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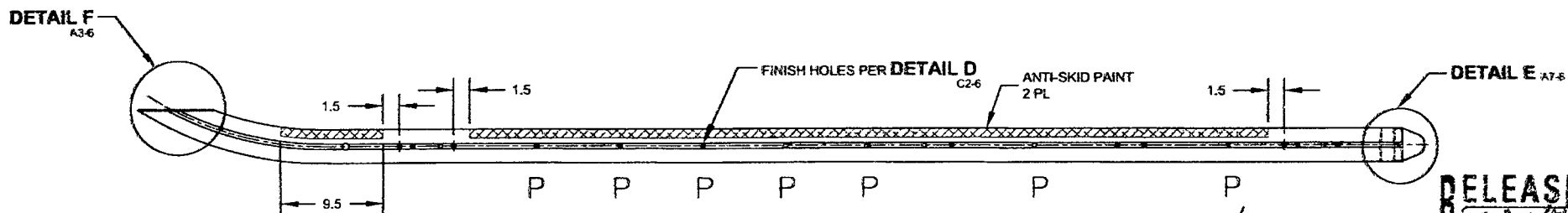
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**D2650-5 BENDING/DRILLING DETAIL**



**D2650-5 ASSEMBLY/FINISHING DETAIL**

*W/O 54917*

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	A/S	PORT HADLOCK, WA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. F
MFG. APPR.	<i>[Signature]</i>	D2650	SHEET 4 OF 6
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	206/407 SKIDTUBE ASSEMBLIES	NTS
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**RELEASED**  
07-19-2010

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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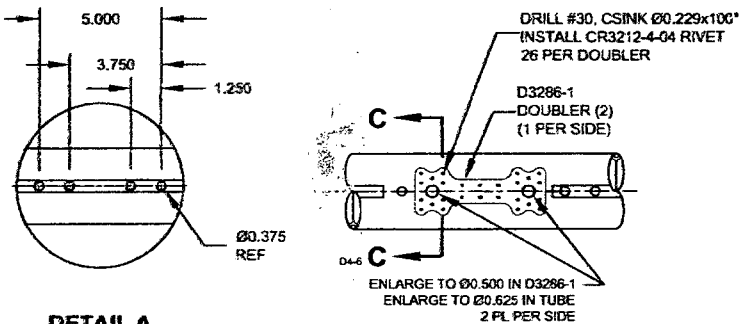
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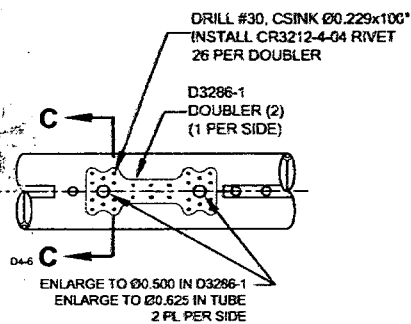
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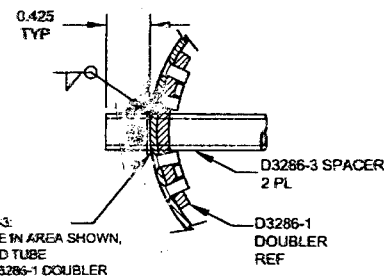


**DETAIL A**  
SCALE 2X  
C2-2  
D7-2  
C2-3  
D7-3  
C2-4  
D7-4  
C2-5  
D6-5

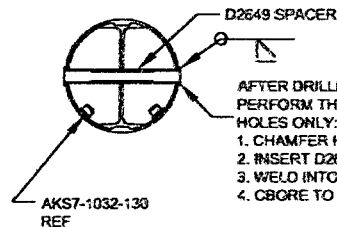


**DETAIL B**  
SCALE 2X  
C3-2  
C3-3

**SECTION C-C** C7-6  
SCALE NONE

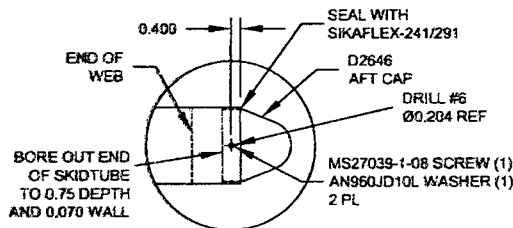


- TO INSTALL D3286-1/3:
1. GRIND OFF FLANGE IN AREA SHOWN, FLUSH WITH ROUND TUBE
  2. LOCATE & DRILL D3286-1 DOUBLER USING DT3286-1T1
  3. ENLARGE HOLES IN D3286-1 TO Ø0.500
  4. ENLARGE HOLES IN TUBE TO Ø0.625 AND CHAMFER HOLE 0.030x45°
  5. RIVET D3286-1 TO TUBE
  6. INSERT D3286-3 SPACER
  7. WELD IN PLACE.

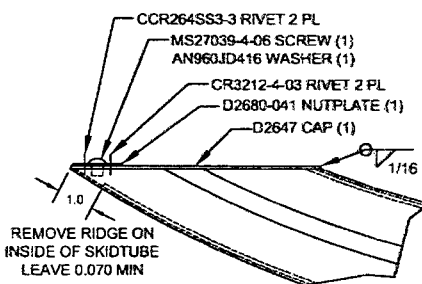


**DETAIL D**  
FOR Ø0.375 HOLES ONLY  
SCALE 3X  
B4-2  
B4-3  
B4-4  
B4-5

- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
1. CHAMFER HOLE 0.030 X 45°
  2. INSERT D2649 SPACER
  3. WELD INTO PLACE AND GRIND FLUSH
  4. CBORE TO Ø0.313 X 0.75 DP



**DETAIL E**  
SCALE 2X  
B2-2  
B2-3  
B1-4  
B1-5



**DETAIL F**  
SCALE NONE  
B6-2  
B6-3  
B6-4  
B6-5

- DETAIL F NOTES:**
1. CUT TUBE LEVEL
  2. REMOVE RIDGE ON FWD SIDE
  3. LOCATE D2647 (TRIM AS NECESSARY)
  4. WELD D2647 IN PLACE PER DART QSI 004
  5. GRIND FLUSH
  6. RIVET D2680-041 NUT PLATE IN PLACE
- NOTE: MASK THREADS IN D2680-041 PRIOR TO FINISH

**RELEASED**  
05-19-22

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AJS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 6 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
DATE	08.08.08	COPYRIGHT © 1987 BY DART AEROSPACE USA, INC	

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

NO. 216

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Barclay Elliott  
Job number: D206 52867  
Part number: D206 642.541  
Description: 206 skid  
Welding Process: Tig[☒] Mig[ ]  
Base material: Aluminium  
Current: AC[☒] DC[ ]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[ ]  
Penetration: pass[☒] fail[ ]

UNACCEPTABLE

Cracks: pass[☒] fail[ ]  
Undercut: pass[☒] fail[ ]  
Pin holes: pass[☒] fail[ ]  
Overlap (cold lap): pass[☒] fail[ ]  
Porosity (surface): pass[☒] fail[ ]  
Coloration: pass[☒] fail[ ]

Qualifier Peterson Date of Test Coupon 09.11.10  
Welder Barclay Elliott Date of Test Coupon 09.11.10

The above named individual is qualified in accordance with AWS D17.1.2001 to weld